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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,205	09/30/2003	Masatsugu Okazaki	393032041500	7106

7590

10/12/2006

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EXAMINER

QIN, JIANCHUN

ART UNIT	PAPER NUMBER
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2837

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/676,205

Applicant(s)

OKAZAKI ET AL.

Examiner

Jianchun Qin

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-12 and 33-46 is/are pending in the application.
- 4a) Of the above claim(s) 12, 45 and 46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9 and 33-37 is/are rejected.
- 7) ☒ Claim(s) 10, 11 and 38-44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/6/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restriction

1. Per Applicants' response dated 11/21/05, a provisional election was made with traverse to prosecute species I of claims 1-4, 6-11 and 33-44. Applicant admitted that claim 12 reads on species II, which was not elected by the Applicants. Accordingly, claim 12, and the newly added dependent claims 45 and 46, are withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Applicants' traversal is noted by the Examiner, however, the arguments are not persuasive. It is the Examiner's position that independent claim 12 (the species best illustrated by the specification on page 7, line 22 – page 10, line 7, and Figs. 9-11) is patentably distinct from independent claim 1 (the species best illustrated by the specification on page 5, line 13 – page 7, line 21, and Fig. 8). Restriction for examination purposes as indicated stands.

The requirement is still deemed proper and is therefore made FINAL. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-3, 7, 8, 33 and 34 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Independent claim 1 is directed to an algorithm for storing compressed waveform data itself rather than a practical application of the algorithm in the real world. The claims do not produce any tangible results. The practical application of the claimed invention cannot be realized until the output is conveyed to the user. For the result to be tangible it would need to output to a user or displayed to a user or stored for later use. Hence the claims are treated as non-statutory subject matter (See MPEP Sec. 2106). Claims 2, 3, 7, 8, 33 and 34 are rejected under 35 U.S.C. 101 base on dependency.

To view the new guidelines for 35 U.S.C. 101 please view the following OG notice: <http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm>

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 6, 7, 9, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. Pat. No. 5489746, hereafter referred to as Suzuki-I) in view of McDowell (U.S. Pat. No. 6931370).

With respect to claim 1:

Suzuki-I discloses a compressed data structure suited for storing of a plurality of samples of compressed waveform data, segmented into a plurality of frames, into a memory, the memory being capable of storing n bits per address (col. 1, lines 60-67; col. 2, lines 20-40; col. 4, lines 54-61), wherein a number of bits per sample of the compressed waveform data is variable between the frames, but uniform within each of the frames (Figs. 2 and 3; col. 3, lines 50-59; col. 4, lines 28-56), and each of the frames includes, in a predetermined layout, an auxiliary information area (Fig.2, HB0 to HB3) for storing auxiliary information that includes compression-related information to be used for decompressing the compressed waveform data, and a data area for storing a plurality of samples of the compressed waveform data of the frame, wherein said compression-related information includes number-of-bits information indicative of said number of bits per sample within the corresponding one of the frames (cols. 3-4, lines 60-24; col. 7, lines 11-24; col. 12, lines 3-26; col. 17, lines 34-61).

Suzuki-I does not mention expressly: irrespective of the number of bits per sample of compressed waveform data stored in said data area of each frame, each frame is stored over said predetermined number j of successive addresses, and wherein said auxiliary information area and data area in each frame are fixed in position

irrespective of the number of bits per sample of compressed waveform data stored in the frame.

McDowell teaches a data form for storing compressed data in a memory (col. 5, lines 18-21), wherein said data is packed into a plurality of data frames (col. 3, lines 25-28), including auxiliary information area and data area in each frame (Fig. 6); wherein irrespective of the number of bits per sample of compressed data stored in said data area of each frame, each frame is stored over said predetermined number j of successive addresses, and wherein said auxiliary information area and data area in each frame are fixed in position irrespective of the number of bits per sample of compressed waveform data stored in the frame (Figs. 6 and 7; cols. 9-10, lines 65-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki-I to allocate a fixed size of data area for each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3).

With respect to claim 2:

Suzuki-I teaches: the data area region in each of said plurality of addresses compactly stores a plurality of samples of the compressed waveform data (Figs. 2 and 3; col. 1, lines 60-67; col. 2, lines 20-40; col. 3, lines 36-43; col. 4, lines 54-61).

Suzuki-I does not mention expressly: wherein said data area ranges over a plurality of addresses in the j successive addresses irrespective of the number of bits per sample of the compressed waveform data stored in the data area of each frame.

The teaching of McDowell includes: said data area ranges over a plurality of addresses in the j successive addresses irrespective of the number of bits per sample of the compressed data stored in the data area of each frame (Figs. 6 and 7; cols. 9-10, lines 65-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki-I to allocate a fixed size of data area for each frame, irrespective of the number of bits per sample of the compressed data stored in each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3).

With respect to claim 3:

Suzuki-I further discloses: a memory storing compressed waveform data of a plurality of frames having a compressed data structure as defined in claim 1 (Figs.1-3; col. 1, lines 60-67; col. 2, lines 20-40; col. 3, lines 36-43; col. 4, lines 54-61).

With respect to claim 6:

Suzuki-I discloses a waveform storage processing apparatus comprising: a compression processing section that compresses a plurality of samples of waveform data (col. 1, lines 17-24; col. 3, lines 36-43; col. 4, lines 54-61); a framing section that segments the plurality of samples of waveform data, compressed by said compression processing section, into a plurality of frames to thereby form the frames (col. 3, lines 50-59; col. 4, lines 54-56), wherein each of the frames has a fixed total number of bits and includes a fixed auxiliary information area and remaining data area, by packing the

compressed and segmented waveform data into the data area and packing compression-related information into the auxiliary information area, wherein a number of bits per sample of the packed waveform data is uniform within each of the frames but variable between the frames, and said compression-related information includes number-of-bits information indicative of said number of bits per sample within the corresponding one of the frames and decompression parameters to be used for the decompression of said compressed waveform data in the corresponding one of the frames (Figs. 1-3; col. 3, lines 50-59; col. 4, lines 28-56; col. 3, lines 50-59; col. 4, lines 28-56; cols. 3-4, lines 60-24; col. 7, lines 11-24; col. 12, lines 3-26; col. 17, lines 34-61); and a writing section that, for each of the frames, writes the frame, formed by said framing section, into memory capable of storing n bits per address, over a predetermined number j of successive address (col. 3, lines 36-43; col. 4, lines 54-61).

Suzuki-I does not mention expressly: irrespective of the number of bits per sample of compressed waveform data stored in said data area of each frame, each frame is stored over said predetermined number j of successive addresses.

McDowell teaches a data form for storing compressed data in a memory (col. 5, lines 18-21), wherein said data is packed into a plurality of data frames (col. 3, lines 25-28), including auxiliary information area and data area in each frame (Fig. 6); wherein irrespective of the number of bits per sample of compressed data stored in said data area of each frame, each frame is stored over said predetermined number j of successive addresses (Figs. 6 and 7; cols. 9-10, lines 65-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki-I to allocate a fixed size of data area for each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3).

With respect to claim 7:

Suzuki-I further discloses: a compressed data structure as claimed in claim 1, wherein m bits of the n bits (where $m < n$) in the j addresses of said memory contain said data area, and a remaining " $n-m$ " bits of the n bits in the j addresses of said memory contain said auxiliary information area (Fig. 2, col. 17, lines 49-60).

With respect to claim 9:

Suzuki-I further discloses: a memory storing a plurality of frames of compressed waveform data having a compressed data structure as defined in claim 7 (Fig 2; col. 1, lines 60-67; col. 2, lines 20-40; col. 3, lines 36-43; col. 4, lines 54-61).

With respect to claims 33 and 34:

Suzuki-I further discloses: said compression-related information further includes decompression parameters to be used for the decompression of said compressed waveform in the corresponding one of the frames (cols. 15-16, lines 60-14; col. 17, lines 34-60); said auxiliary information further includes loop addresses to be used for generation of a tone (col. 17, lines 34-60).

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6. Claims 4 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki-I in view of McDowell, as applied to claim 1 above and further in view of Suzuki et al. (U.S. Pat. No. 5831193, hereafter referred to as Suzuki-II).

With respect to claim 4:

Suzuki-I discloses a tone generation apparatus comprising: a memory as defined in claim 3 (Figs. 1-3; col. 1, lines 60-67; col. 2, lines 20-40; col. 3, lines 36-43; col. 4, lines 54-61); a readout section that designates, on the basis of a readout address, any one of the frames to be read out and reads out stored data of the designated frame from said memory address by address (Figs. 1 and 4; col. 7, lines 1-10); an auxiliary information retrieval section that, of the data of the frame read out by said readout section, retrieves the auxiliary information from the auxiliary information area (Figs. 1 and 4; col. 7, lines 11-24); a compressed waveform data retrieval section that, of the data of the frame read out by said readout section, retrieves the samples of the compressed waveform data from the data area in accordance with the number of bits per sample designated by said number-of-bits information included in the auxiliary information retrieved by said auxiliary information retrieval section (Figs. 1 and 4; col. 7, lines 4-35); a decoding section that decompresses each of the samples of the compressed waveform data retrieved by said compressed waveform data retrieval section (Figs. 1 and 4; col. 7, lines 25-35); and a tone generation section that generates a tone on the basis of the waveform data decompressed by said decoding section (Figs. 1 and 4; col. 7, lines 36-44).

Suzuki-I does not mention expressly: an address generation section that generates, every sampling cycle, a readout address varying at a predetermined rate corresponding to a designated tone pitch.

Suzuki-II discloses a method and device for forming a tone waveform, an teaches: an address generation section that generates, every sampling cycle, a readout address varying at a predetermined rate corresponding to a designated tone pitch (cols. 18-19, lines 54-3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Suzuki-II in the combination of Suzuki-I and McDowell in order to generate a readout address such that the pitch of the readout waveform can be controlled in accordance with a desired reproduction rate (Suzuki-II, col. 5, lines 35-45; col. 19, lines 1-3).

With respect to claims 35-37:

Suzuki-I further disclose: said compression-related information further includes decompression parameters to be used for the decompression of said compressed waveform in the corresponding one of the frames, and said decoding section decompressed each of the samples of the compressed waveform data, using the decompression parameters included in the auxiliary information retrieved by said auxiliary information retrieval section (col. 7, lines 11-35; cols. 15-16, lines 60-14; col. 17, lines 34-60); said decompression parameters are parameters created on the basis of compression parameters used in compressing original waveform data to create said compressed waveform data (col. 7, lines 25-35; col. 17, lines 34-60); said

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decompression parameters are loop addresses for repetitively reading out said compressed waveform data (col. 7, lines 25-35; col. 17, lines 34-60).

Allowable Subject Matter

7. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to overcome the rejection under 35 U.S.C. 101 as set forth above.

8. Claims 10, 11 and 38-44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for Allowance

9. The following is an examiner's statement of reasons for allowance:

Please see Office Action dated 01/24/2006 for reasons for allowance of claims 8, 10, 11 and 38-44.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

11. Applicant's arguments received 07/24/06 with respect to claims 1-4, 6-11 and 33-44 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-4, 6-11 and 33-44 are rejected as new prior art references (U.S. Pat. No. 6931370 to McDowell) has been found to teach the limitations of argued by the Applicant. Please see section 3 as set forth above in this Office Action for details of the response.

Prior Art Citations

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1) Lattibeaudiere (U. S. Pat. No. 5438535) is entitled "Content addressable memory system".

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2) Sato (U. S. Pat. No. 6300552) is entitled "Waveform data time expanding and compressing device".

3) Divine et al. (U. S. Pat. No. 6081783) is entitled "Dual processor digital audio decoder with shared memory data transfer and task partitioning for decompressing compressed audio data, and systems and methods using the same".

Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jianchun Qin whose telephone number is (571) 272-5981. The examiner can normally be reached on 8am - 5:30pm.

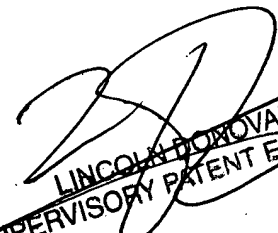
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jianchun Qin
Examiner
Art Unit 2837

JQ-JC


LINCOLN BOROVAN
SUPERVISORY PATENT EXAMINER